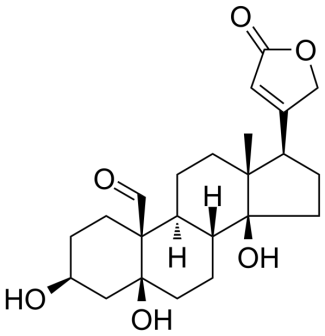
Strophanthidin

Cat. No.:	HY-114252
CAS No.:	66-28-4
Molecular Formula:	$C_{23}H_{32}O_6$
Molecular Weight:	404.5
Target:	Na+/K+ ATPase
Pathway:	Membrane Transporter/Ion Channel
Storage:	4°C, sealed storage, away from moisture and light * In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture and light)



SOLVENT & SOLUBILITY

In Vitro

Ethanol : 25 mg/mL (61.80 mM; Need ultrasonic)

Preparing Stock Solutions	Mass / Solvent / Concentration	1 mg	5 mg	10 mg
	1 mM	2.4722 mL	12.3609 mL	24.7219 mL
	5 mM	0.4944 mL	2.4722 mL	4.9444 mL
	10 mM	0.2472 mL	1.2361 mL	2.4722 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: 10% EtOH >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (6.18 mM); Clear solution
2. Add each solvent one by one: 10% EtOH >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (6.18 mM); Clear solution
3. Add each solvent one by one: 10% EtOH >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (6.18 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Strophanthidin is a naturally available cardiac glycoside[1]. Strophanthidin 0.1 and 1 nmol/L increases and 1~100 μmol/L inhibits the Na+/K+-ATPase activities, but Strophanthidin 10 and 100 nmol/L does not affect Na+/K+-ATPase activities in cardiac sarcolemmal[2]. Strophanthidin increases both diastolic and systolic intracellular Ca^{2+} concentration[3].

IC_{50} & Target

Na+/K+-ATPase[2]

In Vitro

Strophanthidin (0~10 μM; 24 hours; MCF-7, A549, and HepG2 cells) is effective at suppressing the growth of cancer cells and has no toxicity in normal cells[1].

Strophanthidin (0.5 to 500 μM; PBMCs) does not show significant cytotoxicity in PBMCs. Strophanthidin (2 μM; MCF-7 cells) can arrest cell cycle at the G2/M phase[1].

Strophanthidin (MCF-7, A549, and HepG2 cells) is effective at suppressing the growth of cancer cells and has no toxicity in normal cells. Strophanthidin (MCF-7, A549, and HepG2 cells) inhibits the expression of checkpoint and cyclin-dependent kinases in three cancer cells compared to untreated controls. Strophanthidin can modulate the protein localization from the nucleus to the membrane as well as to the cytoplasm. Strophanthidin is a monosaccharide cardiac glycoside with one aglycone portion and without any sugar unit. Strophanthidin induces apoptosis by the attenuation of multiple biochemical signaling pathways and by arresting cell cycle at the G2/M phase through p53-dependent and p53-independent mechanisms [1].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Viability Assay[1]

Cell Line:	MCF-7, A549, and HepG2 cells
Concentration:	0~10 μM
Incubation Time:	24 hours
Result:	Inhibited the proliferation in three different cancer cells.

REFERENCES

[1]. Reddy D, et al. Strophanthidin Attenuates MAPK, PI3K/AKT/mTOR, and Wnt/β-Catenin Signaling Pathways in Human Cancers. Front Oncol. 2020;9:1469. Published 2020 Jan 17.

[2]. Su SW, et al. Relationship between cardiotonic effects and inhibition on cardiac sarcolemmal Na+,K+-ATPase of strophan-thidin at low concentrations. Acta Pharmacol Sin. 2003;24(11):1103-1107.

[3]. Bennett DL, et al. Strophanthidin-induced gain of Ca2+ occurs during diastole and not systole in guinea-pig ventricular myocytes. Pflugers Arch. 1999;437(5):731-736.

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